Blue Skies for the Best People

Ruth Williams

The National Institutes of Health plans to offer more money and more freedom to the best researchers, but there are downsides, say scientists.

In July, the National Institutes of Health (NIH) Deputy Director for Extramural Research, Sally Rockey, announced on her blog, Rock Talk, that the federal agency will begin offering longer term financial support to scientists with strong previous accomplishments, allowing them to pursue more ambitious lines of research.2 The move is a change of direction for the NIH, which has traditionally awarded research grants on the basis of specific project proposals with clear-cut scientific goals.

Many argue that the freedom to pursue so-called blue-sky research is essential in science. Indeed, in the field of cardiology itself, many major discoveries have been made thanks to curiosity-driven, blue-sky science.3 Thus, unshackling scientists from the pressure to hit specific research targets in short time frames—3 aims in a maximum of 5 years, in the case of the NIH’s traditional RO1 scheme—could enable them to be a little more risky, said Rockey in a new interview with Circulation Research. The new R35 scheme offers funds for a maximum of 8 years and requires only a general outline of intended research. “It is our belief,” said Rockey, that the scheme would lead to more creative science.

And that should mean more bang (scientific impact) for the NIH bucks. There is certainly evidence that funding people rather than projects can give greater returns. For example, research driven by the NIH’s own Pioneer Awards—a miniature version of the new scheme—tends to outcompete comparable RO1-funded research in terms of impact.4 And the Howard Hughes Institute, which has been funding people rather than projects for decades, has more than its fair share of Nobel Prize-winners among past and present grant recipients.

The Best Get Better

Despite the precedents and potential benefits, however, there are some valid objections to the policy, including concerns about the basis on which individuals will be chosen. Although research published in Circulation Research suggests that the past scientific success is a good indicator of future success—in terms of publications and citations—Steven Houser, Senior Associate Dean for Research at Temple University School of Medicine in Philadelphia, is worried that choosing people on that basis alone is a rich-get-richer system. If those with the best track record are awarded funds, they will likely gain even greater success, whereas younger researchers with no track record will suffer, he said.

“It’s really bad for the young people right now,” he added, quoting an article that reported only 25% of current post docs can expect to get jobs. “And in the face of that, the NIH are saying ‘we’re going to make it easier for the people at the top to get money’? That seems like a disconnect to me.”

“Is this the time to focus on the people at the top?” he asked, “or should we be thinking about ways to stabilize the research environment… so that we can have the next cadre of folks to carry science forward.”

Houser’s point highlights an issue that the UK-based Wellcome Trust charity is currently facing having introduced a similar investigator-focused funding scheme a few years ago: the scheme is favoring older researchers.4

“We do have to be cautious that we don’t run ourselves into the same problems that Wellcome Trust has gotten itself into,” admitted Rockey. “We have to work very carefully to look at, not only a person’s past accomplishments, but their potential for the future… and take into context the point at which a person is in their career when they submit this application.”

It’s like a wrestling match, said Michael Lauer, Director of the National Heart Lung and Blood Institute. “You don’t have heavyweights fighting lightweights, you have lightweights fighting lightweights to make the process fair. So I could easily imaging that we could come up with creative ways to make this process equitable,” he said. “We can’t have early stage investigators up against Nobel Prize winners.”
Is it Really Best for Science?

Aside from establishing the logistics of a fair and equitable system, Aruni Bhatnagar, a Professor of Medicine at the University of Louisville in Kentucky, wonders whether science should be done this way at all. “The whole point in science is that we have great science but not great scientists and that is for a reason,” he said. “It is not people and their personalities that run science. It is not show business or politics. It is not the personality that should count. It is the shear value of an idea that should hold, no matter where it comes from.”

He continued, “There is a very old recipe. It comes from Aristotle and it says that you need three things to make an argument: a logos, a pathos and an ethos. A pathos is the significance—that’s your plea. The ethos is the person making the argument. And then there is logos—the intrinsic logic of the argument. Now, if we fund only people, then we deserve the two other issues. We say we don’t care about logos so much, we don’t care about pathos, we only care about ethos.”

Bhatnagar believes that one of the solutions would be to support team-based research. “I think that really good research can come out of teams and collective groups of people who work together,” he said. “It is what has happened in physics and advanced engineering, and I think that it is inevitable that we will go in that direction. There are some very valuable things to team building. This [the new scheme] would be going backwards from there.”

Eugene Braunwald, Distinguished Hersey Professor of Medicine at Harvard Medical School and the Chairman of the TIMI Study Group at the Brigham and Women’s Hospital in Boston, also thinks that the “NIH should support projects, not people.” But he offered a different solution, suggesting a way to incorporate past performance into the R01 grant review process. “In evaluating applications the reviewers should provide four separate grades and then provide a total score,” he said. “The creativity and unique nature of the ideas should be weighted at 50%. The track record of the PI should be weighted at 30%. The strength of the collaborations and institutional resources should be weighted at 10%. Finally, the particular techniques to be used should be weighted at 10%.”

Given the range of concerns, suggestions, and differing views, it is probably a good thing that the NIH is allowing the individual institutes to apply the R35 scheme as they see fit. And it is a good thing that Lauer and the National Heart Lung and Blood Institute have “not yet decided how to approach this.” Instead, Lauer says, they plan to “get into conversations with people in the scientific community about subjecting the process of grant allocations to experimentation.”

“The most important point here is that this would have to be thought through very carefully. And there is probably no obvious single solution,” he said. “Making decisions about funding is difficult, but given that we are scientists, it seems only appropriate that we should apply the scientific method to figuring out… what is most equitable and what would lead to a maximum return on investment.”

Jeffrey Robbins, who holds the position of Director and Endowed Chair of Molecular Cardiovascular Biology, among others, at Cincinnati Children’s Hospital, agreed. “Generally I think it [the R35 scheme] is a pretty reasonable thing to try. I don’t think that the whole system should switch over to it. I think that they should test it… I’m a great believer in experimenting.”

Grant-Writing Grief

Perhaps one of the major predicted benefits of the new scheme is that it will get researchers off of the torturous “horribly inefficient” grant-writing treadmill, said Lauer. “One of the goals of a program like this would be to make the process easier and less time consuming,” he said. “I have seen estimates that more than 40% of a scientist’s time is spent either writing grants or administering grants,” and that is obviously very inefficient. It essentially means that we are only getting 60% out of our scientists, and that is not an acceptable state of affairs.”

It’s an inefficient use of time and money, agreed Robbins. “In my department I have two full time grants managers who are just responsible for submitting the grant to grants.gov,” he explained, “That’s about $170,000 that I have to pay for two people to just submit the grants that my faculty write.”

But, being released from the burden of grant-writing isn’t a clear benefit, either, said Bhatnagar. “Most people think of grant writing as an extraneous chore that they have to do. When in a sense it is not,” he said. “It provides them with an opportunity to sit down, think, and focus on their long term plan of research. Grant writing has an invaluable sort of benefit to new investigators, no matter how stressed they are.”

Furthermore, he said, even senior scientists can benefit from grant writing. “Decreasing the time they would be writing grants robs them of the opportunity of sitting back and really looking at their entire research program and rigorously evaluating what it is that they are doing.”

Even Robbins, despite the time and money spent on grants in his department, agrees with Bhatnagar. “Investigators complain bitterly about it [grant writing]. I think that complaining is probably overdone,” he said. “Speaking from personal experience—because I’ve written a lot of grants—it does focus your thinking and I think it is probably helpful for a lot of people… So yes I do think it [the R35 scheme] would reduce the amount of time spent in grant writing. I don’t necessarily think that in all cases that is a good thing.” Maybe, he suggested, “there should be a limit for people who participate in the [R35] program, in terms of the number of times you can go to that trough.”

Achieving a balance between freedom and focus will be one challenge. “It’s like Goldilocks and the three bears,” said Houser. “There’s a sweet spot.” Achieving a fair balance of funding for senior and junior scientists alike will be another. Indeed, figuring out how to implement the new R35 system is going to be a tricky act for Lauer and the other NIH leaders to pull-off if everyone is to have an equal opportunity to see a bit of blue sky.

Disclosures

None.

References

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_Circ Res._ 2014;115:967-968; originally published online November 4, 2014;
doi: 10.1161/CIRCRESAHA.114.305403

_Circulation Research_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2014 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7330. Online ISSN: 1524-4571

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://circres.ahajournals.org/content/115/12/967

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